



## POST GRADUATE DEPARTMENT OF PHYSICS UNIVERSITY OF KASHMIR, SRINAGAR - 190 006

A series of meetings attended by all the Departmental Committee members were conducted during the month of November 2013 to discuss the implementation of the Choice Based Credit System (CBCS). This was followed by a meeting of the Board of Post Graduate Studies (BOPGS) of the Department on November 21, 2013 in which the recommendations of the previous meetings were discussed and further deliberations made.

The following members were present :

S. No.	Name	Designation
1.	Prof. S. Javid Ahmad Head, Department of Physics	Chairman
2.	Prof. Nisar Ahamd Rather Head, Department of Mathematics	Member
3.	Dr. Manzoor A. Malik	Member
4.	Dr. Shakeel A. Simnani	Member
5.	Dr. Sajad Masood	Member
6.	Dr. Gowhar Bashir Vakeel	Member
7.	Dr. Basharat A. Want	Member
8.	Dr. M. Farooq Mir	Member
9.	Dr. Naseer Iqbal	Member
10.	Dr. Waseem Bari	Member
11.	Dr. Nisar Ahmad	Member
12.	Mr. Muzaffar Qadir	Member
13.	Dr. S. Golam Ali	Member
14.	Mr. Raja Nisar Ali (Research Scholar)	Member
15.	Dr. Prince Ganaie (Research Scholar)	Member

(Order of the appearance in the above does not indicate any seniority)

The courses offered in all the four semesters of the PG programme were discussed in detail. Following important considerations were made in formulating the curriculum according to the new CBCS system:

1. The courses without which an M. Sc. Physics degree is incomplete shall be made compulsory as Core Courses.
2. Care should be taken to design courses in such a way that the syllabi of National level examinations like NET/JRF, JEST etc. is covered by the core courses.
3. 1<sup>st</sup> and 2<sup>nd</sup> Semester may mainly contain core courses while 3<sup>rd</sup> and 4<sup>th</sup> Semester shall contain fewer number of core courses so that the overall M. Sc. programme is consistent with the CBCS system adopted by the University.
4. Sufficient number of Allied Elective and Open Elective courses should be introduced so that students have a wided choice.

Keeping the above in view, the BOPGS recommends the following structure of the courses for four semesters of PG programme in Physics.

### **SEMESTER - I**

Course Code	Title of the Course	Distribution of Credits			Total No. of Credits
		L	T	P	
<b>CORE (CR) COURSES</b>					
PHYCR101	Mathematical Physics – I	03	01	0	04
PHYCR102	Quantum Mechanics – I	03	01	0	04
PHYCR103	Classical Mechanics	03	01	0	04
PHYCR104	Statistical Mechanics	03	01	0	04
PHYCR105	Lab. Course	0	0	04	04
<b>ALLIED ELECTIVE (AE) COURSES</b>					
PHYAE106	Methods of Experimental Physics	01	0	01	02
PHYAE107	Physics Education	02	0	0	02
PHYAE108	Basic Astronomy	02	0	0	02
<b>OPEN ELECTIVE (OE) COURSES</b>					

PHYOE109	Biophysics	02	0	0	02
PHYOE110	Philosophical foundations of Quantum Mechanics	02	0	0	02

**NOTE:**

- The students pursuing M. Sc. in Physics shall have to earn a minimum of 24 credits in total with the following distribution.
  - All the five core courses of 04 credits each, total amounting to 20 credits.
  - At least one Allied Elective course of 02 credits amounting to 02 credits. The other 02 credits can be earned from outside the department.
  - The students can opt for two elective courses of 02 credits earning them 04 credits so that they may not need to earn any credits from outside.
  - However, during the whole course, the student has to earn at least 04 credits from outside the Department.
- The outside students (students other than pursuing M. Sc. in Physics) can opt for any number of Open Elective Courses keeping in view of the restrictions/conditions of their parent Department.

**SEMESTER – II**

<b>CORE (CR) COURSES</b>					
<b>Course Code</b>	<b>Title of the Course</b>	<b>Distribution of Credits</b>			<b>Total No. of Credits</b>
		<b>L</b>	<b>T</b>	<b>P</b>	
PHYCR201	Mathematical Physics – II	03	01	0	04
PHYCR202	Quantum Mechanics – II	03	01	0	04
PHYCR203	Electrodynamics - I	03	01	0	04
PHYCR204	Atomic and Molecular Physics	03	01	0	04
PHYCR205	Lab. Course	0	0	04	04
<b>ALLIED ELECTIVE (AE) COURSES</b>					
PHYAE206	Tensor Analysis	02	0	0	02
PHYAE207	Astronomical Techniques	02	0	0	02

PHYAE208	Crystallography	02	0	0	02
<b>OPEN ELECTIVE (OE) COURSES</b>					
PHYOE209	Philosophical foundations of Physics	02	0	0	02
PHYOE210	Modern Communication Systems	02	0	0	02
PHYOE211	Renewable Energy Sources	02	0	0	02

**NOTE:**

- The students pursuing M. Sc. in Physics shall have to earn a minimum of 24 credits in total with the following distribution.
  - All the five core courses of 04 credits each, total amounting to 20 credits.
  - At least one Allied Elective course of 02 credits amounting to 02 credits. The other 02 credits can be earned from outside the department.
  - The students can opt for two elective courses of 02 credits earning them 04 credits so that they may not need to earn any credits from outside.
  - However, during the whole course, the student has to earn at least 04 credits from outside the Department.
- The outside students (students other than pursuing M. Sc. in Physics) can opt for any number of Open Elective Courses keeping in view of the restrictions/conditions of their parent Department.

**SEMESTER – III**

Course Code	Title of the Course	Distribution of Credits			Total No. of Credits
		L	T	P	
<b>CORE (CR) COURSES</b>					
PHYCR301	Nuclear Physics	03	01	0	04
PHYCR202	Condensed Matter Physics	03	01	0	04
PHYCR303	Electrodynamics - II	03	01	0	04
PHYCR304	Seminar/Oral Presentation/Demonstration	0	02	0	02
<b>ALLIED ELECTIVE (AE) COURSES</b>					

PHYAE305	Astrophysics – I	03	01	0	04
PHYAE306	Field Theory – I	03	01	0	04
PHYAE307	Microwave Devices and Circuits	02	0	0	02
PHYAE308	Advanced Lab. Methods	01	0	01	02
<b>OPEN ELECTIVE (OE) COURSES</b>					
PHYOE309	Computational Methods	02	0	02	04
PHYOE310	Density Functional Theory	03	01	0	04

**NOTE:**

- The students pursuing M. Sc. in Physics shall have to earn, at least, 24 credits in total with the following distribution.
  - All the four core courses (three of 04 credits each and one of 02 credits), amounting to 14 credits.
  - Any number of Allied Elective courses which shall earn the student, the rest of the credits.
  - A combination of Allied Elective and Open Elective Courses, including Open Electives offered by other Departments, which earn the student rest of the credits keeping in view the maximum limit of 04credits from other Deptts. During the whole course of the programme.
- The outside students (students other than pursuing M. Sc. in Physics) can opt for any number of Open Elective Courses keeping in view the restrictions/conditions of their parent Department.

**SEMESTER – IV**

Course Code	Title of the Course	Distribution of Credits			Total No. of Credits
		L	T	P	
<b>CORE (CR) COURSES</b>					
PHYCR401	Particle Physics	03	01	0	04
PHYCR402	Project	0	04	0	04
<b>ALLIED ELECTIVE (AE) COURSES</b>					
PHYAE403	Physics of Nano-materials	03	01	0	04

PHYAE404	High Energy Physics	03	01	0	04
PHYAE405	Astrophysics – II	03	01	0	04
PHYAE406	Field Theory – II	02	0	0	02
PHYAE407	Bose-Einstein Condensate	03	01	0	02
PHYAE408	Neutrino Physics	02	0	0	02
<b>OPEN ELECTIVE (OE) COURSES</b>					
PHYOE409	Antenna and Wave Propagation	03	01	0	04
PHYOE410	Atmospheric Physics	03	01	0	04
PHYOE411	Advanced Digital Systems	01	0	01	02
PHYOE412	Superconductivity	02	0	0	02

**NOTE:**

1. The students pursuing M. Sc. in Physics shall have to earn at least 24 credits in total with the following distribution.
  - All the two core courses of 04 credits each, amounting to 08 credits.
  - Any number of Allied Elective courses which shall earn the student, the rest of the credits.
  - A combination of Allied Elective and Open Elective Courses, including Open Electives offered by other Departments, which earn the student rest of the credits keeping in view the maximum limit of 04 credits from other Departments during the whole M.Sc programme.
  
2. The outside students (students other than pursuing M. Sc. in Physics) can opt for any number of Open Elective Courses keeping in view the restrictions/conditions of their parent Department.

**(Professor S. Javid Ahmad)**  
Head of the Department